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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,725	03/29/2000	Seok-Keun Koh	0630-2009PUS1	9859

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EXAMINER

MAYEKAR, KISHOR

ART UNIT PAPER NUMBER

1753

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/509,725	KOH ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kishor Mayekar	1753	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-23,25,26 and 28-36 is/are pending in the application.
- 4a) Of the above claim(s) 2-19, 22 and 30-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,20,21,23,25,26,28,29 and 33-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

1. This is in response to Appeal Brief filed on 11 May 2006 where the Applicant raises the issue that claim 25 has not been examined by the examiner.

### *Claim Rejections - 35 USC § 112*

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 20, 21, 23, 25, 26, 28, 29 and 33-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the

claimed invention. Independent claim 1 and independent new 36 recite the step of "applying a voltage to the electrodes for 5-60 seconds in order to obtain a DC plasma consisting of positive or negative ions and radicals generated from the unsaturated aliphatic hydrocarbon monomer or the fluorine containing monomer gas and the non-polymerizable gas, and then forming a polymer with hydrophilicity or hydrophobicity on a surface of the anode by plasma electrodeposition" where the subject matter, the optimal processing time for the recited plasma polymerization method, "for 5-60 seconds" had been added to claim 1 in the amendment filed 14 June 2005 and as with the new claim 36 in the amendment filed 19 January 2006. The subject matter is derived from Figs. 16A and 16B. In the Figs. 16A and 16B, the conditions is for a DC discharge from acetylene as the unsaturated aliphatic hydrocarbon monomer and N<sub>2</sub> as the non-polymerizable gas each at 0.15 Torr. However, there is no support for the limitation for a DC discharge from the fluorine containing monomer gas and the non-polymerizable gas. And this raises a new issue of new matter because the specification as originally filed has no support for the limitation.

5. Claims 1, 20, 21, 23, 25, 26, 28, 29 and 33-36 are rejected under 35

U.S.C. 112, first paragraph, because the specification, while being enabling for 1) the recited at least one non-polymerizable gas in order to improve the hydrophilicity of the polymer and 2) the optimal processing time "5-60 seconds" for the recited plasma polymerization resulted from the DC discharge from acetylene and N<sub>2</sub>, does not reasonably provide enablement for 1) the improvement when the polymer is formed from the fluorine-containing monomer and 2) the optimal processing time for the recited plasma polymerization resulted from the DC discharge from acetylene and other recited non-polymerizable gas, respectively. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The independent claims 1 and 36 recite that a method comprises 1) the step of forming the polymer from plasma polymerization of either the unsaturated aliphatic hydrocarbon monomer or the fluorine containing monomer with the non-polymerizable gas and 2) the recited step of applying with the optimal time therefrom. Because of the breadth of the claims, the above claimed subject matter can be interpreted as that 1) the polymer formed from plasma polymerization of the fluorine containing monomer with the non-polymerizable gas, and 2) the optimal processing time for the recited plasma

polymerization resulted from the DC discharge from acetylene and other recited non-polymerizable gas, for example. And the specification does not enabling such an interpretation.

6. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 25, the claim is indefinite because the recited polymerization time is broader than that in claim 1.

***Claim Rejections - 35 USC § 103***

7. All the references cited in previous Office actions.

8. Claims 1, 20, 21, 25, 26, 28 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cummin et al. (US 3,252,830) in light of Applicant's admission, both references cited in the last Office action and in view of Haque et al. (US 4,588,641). Cummin's invention is directed to a method for producing thin dielectric organic polymerics films to be employed in making a capacitor. Cummin

discloses that the film is produced by all the steps as claimed (Fig. 1; col. 2, line 55 through col. 3, line 27; col. 3, line 67 through col. 4, line 14; and col. 4, lines 27-30 and lines 43-52). Cummin also discloses in col. 4, lines 35-42 that the film thickness is less than 0.5 micron and relatively thicker films have been found to be less desirable. As to the adhesion property of the films, it is inherently possessed by the films when the substrate is the anode. As to the plasma formation, Applicant admits in the first full paragraph of page 3 of the specification that ionized gas and radicals are formed inside the plasma. As to hydrophilicity or hydrophobicity, since the polymer is formed from a DC plasma from the same gases, it is inherent in the Cummin's films as it is obtained by the same process steps. The differences between Cummin and the above claims are the recited period of applying the voltage and the surface-processed step.

As to the first difference, because Cummin teaches the film thickness of less than 0.5 micron and in col. 4, lines 27-38 that it is also possible to control the rate of polymerization, ie, by operating the glow discharge process with a partial pressure of the carrier gas along with the organic monomer, and the thickness, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Cummin's teachings in

light of Applicant's admission as it has been settled that proper adjustment of a known effective variable of a known or obvious process is within the capabilities of one having ordinary skill in the art. *In re Aller* 105 USPQ 233; *In re Boesch* 205 USPQ 215.

The same is applied to claim 21 as it is obtained by the same process steps and claims 25, 26 and 28 for the optimization.

As to the second difference, Haque shows in a plasma treatment for improving adhesion of metallic and non-metallic substrates the steps of plasma polymerization the substrate with a hydrocarbon monomer and surface processing the plasma polymerized substrate (see abstract; col. 5, line 62 through col. 6, line 46). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Cummin's teachings in light of Applicant's admission as shown by Haque because this would result in further treated the plasma polymerized gas.

As to the subject matter of claim 35, Cummin discloses it in Fig. 2 and col. 4, line 68 through col. 5, line 7. As such, the selection of substrate from either a metallic sheet or metallized insulating sheet would have been within the skill of ordinary level in the art.



9. Claims 23 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cummin '830 in light of Applicant's admission and in view of Haque '641 as applied to claims 1, 20, 21, 25, 26, 28 and 33-35 above, and further in view of Yanagihara et al. (US 4,693,799). The difference between the references as applied above and the instant claim is the DC discharge is performed periodically in the form of on/off pulsing during a total processing time. Yanagihara shows in a process for producing plasma polymerized film using a pulse discharging where the discharging is direct current discharge and wherein the gas is unsaturated aliphatic hydrocarbon monomer with an inert gas (see abstract; col. 2, line 52 through col. 3, line 15; col. 3, line 67 through col. 4, line 1; col. 4, lines 46-52; and col. 7, lines 15-24). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the references' teachings as suggested by Yanagihara because this would result in improving properties of the organic polymeric films as compared to films obtained from a continuous plasma polymerization process.

10. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cummin '830 in light of Applicant's admission and in view of Haque '641 as applied to

claims 1, 20, 21, 25, 26, 28 and 33-35 above, and further in view of Kleeberg et al. (US 5,089,290), another reference cited in the last Office action. The difference between the references as applied above and the instant claim is the step of annealing the formed polymer. Kleeberg shows the above limitation in a method of plasma polymerization of a substrate (see abstract). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the references' teachings as suggested by Kleeberg because this would result in stabilizing the formed polymer.

### *Response to Arguments*

11. Applicant's arguments filed 11 May 2006 have been fully considered but they are not persuasive because of the new ground of rejections set forth in the above paragraphs.

In response to the applicant's argument that all the cited references fail to disclose or suggest the plasma polymerization method time period range of 5-60 seconds, since the optimal time is depending upon the concentration of the acetylene, it is clear that upon plasma polymerizing the polymerization is no longer

proceeded when concentration of acetylene is at minimum. Further, Cummin teaches the optimization.

As to the argument to the inherency as asserted by the examiner, the rejection stands because of the same steps with the same materials.

As to the argument to the post process, Haque shows the limitation.

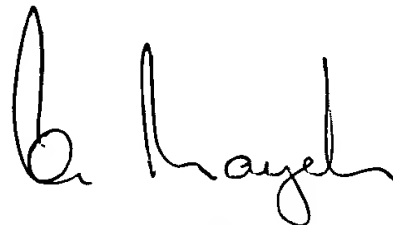
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR

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A handwritten signature in black ink, appearing to read 'K Mayekar', with a stylized, cursive script.

Kishor Mayekar  
Primary Examiner  
Art Unit 1753